

certificate  
no. **HSM 09079**  
dated 2019-01-21

Translation In any case, the German original shall prevail.

## EC Type-Examination Certificate

Name and address of the holder of the certificate (customer): Fotoelektrik Pauly GmbH  
Wahrbrink 6  
59368 Werne  
GERMANY

Product designation: **Opto-electronic distancing device for cranes**

Type: CPV1037 and CPV1038, including reflector and shelter

Testing based on: • GS-HSM-30 "Electrical, electronic and programmable control systems and bus systems", 04-2018

Test Report: No. 2018-043 dated 18.01.2019

Further details: Intended use: Distancing and anti-collision system for exclusively power-operated, stationary and rail-mounted cranes that are operated on one shared crane runway. The optical system of the light barrier and the reflector shall be at the same height level. The system is intended for exclusive use in weather-protected application areas and in machines falling under the scope of EN 15011 (Bridge and gantry cranes), DIN EN 60204-32 (Electrical equipment of cranes) as well as DIN EN 12077-2 (Limiting and indicating devices). Taking into account the user documentation, the system complies with the requirements of cat. 2 and PL c of EN ISO 13849-1.


Remarks: Safety parameters: see Annex  
Follow-up certificate of HSM 09079 dated 08.11.2017.

The type tested complies with the provisions laid down in the directive 2006/42/EC (**Machinery**).

The present certificate is valid until: **2022-05-31**

Further provisions concerning the validity, the extension of the validity and other conditions are laid down in the Rules of Procedure for Testing and Certification.



  
Dipl.-Ing. Carsten Diekel  
Head of testing and certification body

**ANNEX**

to certificate no. HSM 09079 dated 21.01.2019  
 (superseding the Annex dated 08.11.2017, version 1.3)

Name and address of the certificate holder: Fotoelektrik Pauly GmbH  
 Wahrbrink 6  
 59368 Werne

Product designation: Opto- electronic distancing device for cranes,  
 types CPV1037 and CPV1038

**Version history**

Cl.	Description	Version old	Version new
1, 2	Adapted to applicable safety parameters in acc. with EN ISO 13849-1, PL c	1.3	1.4
3	Reflector type 8R100BLH (heated) deleted		

**1. Parameters of type CPV1037**

Designation	Value
Category (cat.) in acc. with EN ISO 13849-1	2
Performance Level (PL) in acc. with EN ISO 13849-1	c
Safety integrity level (SIL) in acc. with EN IEC 62061	1
Average value for diagnostic coverage $DC_{avg}$	92%
Mean time to dangerous failure (MTTF <sub>d</sub> ) [a]	88
Average probability of a dangerous failure per hour PFH <sub>d</sub> [1/h]	$6,61 \times 10^{-7}$
CCF, total score in acc. with EN ISO 13849-1	95
Mission time $T_M$ [a]	20

The evaluation is based on the following values:

Designation	Value
Mean operation hours per day (hop) [h]	24
Mean operation days per year (dop) [d]	365
Mean time between the beginning of two successive cycles in seconds (tcycle) [s]	3600
Mean number of annual operations ( $n_{op}$ )	8760
Mean time between the beginning of two successive test cycles in milliseconds [ms]	10

## **ANNEX**

to certificate no. HSM 09079 dated 21.01.2019  
 (superseding the Annex dated 08.11.2017, version 1.3)

### **2. Parameters for type CPV1038**

<b>Designation</b>	<b>Value</b>
Category (cat.) in acc. with EN ISO 13849-1	2
Performance Level (PL) in acc. with EN ISO 13849-1	c
Safety integrity level (SIL) in acc. with EN IEC 62061	1
Average value for diagnostic coverage $DC_{avg}$	92%
Mean time to dangerous failure (MTTF <sub>d</sub> ) [a]	86
Average probability of a dangerous failure per hour PFH <sub>d</sub> [1/h]	$6,61 \times 10^{-7}$
CCF, total score in acc. with EN ISO 13849-1	95
Mission time $T_M$ [a]	20

The evaluation is based on the following values:

<b>Designation</b>	<b>Value</b>
Mean operation hours per day (hop) [h]	24
Mean operation days per year (dop) [d]	365
Mean time between the beginning of two successive cycles in seconds (tcycle) [s]	3600
Mean number of annual operations ( $n_{op}$ )	8760
Mean time between the beginning of two successive test cycles in milliseconds [ms]	10

#### **Remark:**

The details rel. to  $DC_{avg}$ , MTTF<sub>d</sub>, PFH<sub>d</sub> and CCF refer exclusively to aspects of reliability of the hardware of the electronic assemblies.

Düsseldorf, 21.01.2019

signed Diekel

(Dipl.-Ing. Diekel)

**Head of the Testing and Certification Body**

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